



Reaching out

A group of JSC's cooperative education students is reaching out to area high school students. Story on Page 3.



Picnic trams

JSC Picnic goers will have a way to beat the parking problem at the Gilruth Center this year. Story on Page 4.

Space News Roundup

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Station panel gets redesign budget targets

NASA, international partners agree to fully consider use of Russian assets

The director of the Office of Science and Technology Policy said Tuesday he has provided members-designate of the White House's blue-ribbon panel on the space station redesign with three budget option guidelines for use in their deliberations.

Dr. John H. Gibbons also said that the United States and its international partners—the Europeans, Japanese and Canadians—have decided, after consultation, to give "full consideration" to use of Russian assets in the course of the space station redesign process.

A low option of \$5 billion, a mid-range option of \$7 billion and a high option of \$9 billion will be considered by the committee. Each option would cover the total expenditures for space station from fiscal year 1994 through 1998 and would include funds for development, operations, utilization, shuttle integration, facilities, research operations support, transition cost and also must include adequate program reserves to insure program implementation within the available funds.

Over the next five years, \$4 billion is reserved within the NASA budget for the President's new technology investment. As a result, station options above \$7 billion must be accompanied by offsetting reductions in the rest of the NASA budget.

"President Clinton is committed to the redesigned space station and to making every effort to preserve the science, the technology and the jobs that the space station program represents," Gibbons said. "However, he also is committed to a space

station that is well managed and one that does not consume the national resources which should be used to invest in the future of this industry and this nation."

Gibbons presented the information at an organizational session of the 16-member advisory committee being led by Dr. Charles M. Vest, president of the Massachusetts Institute of Technology. Generally, the members-designate focused upon administrative topics and used the session to get acquainted.

Please see **PANEL**, Page 4

Space station redesign team eyes all options

NASA's Space Station Redesign Team is looking at every option as it moves toward a June deadline for a plan to build an operational station by 1998 at half the cost, deputy director of the team Bryan O'Connor said last Monday.

The team is looking at three basic option families: an expandable modular buildup, a single launch core station—being led by JSC's Chet Vaughan—and a Space Station Freedom-derived option. Several paths are being eyed in each option.

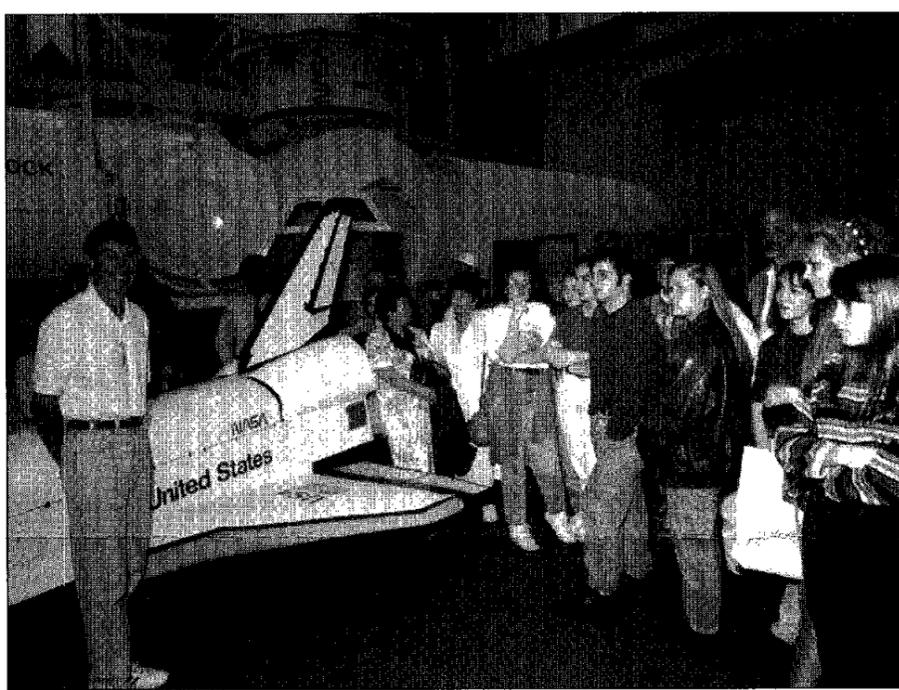
The group's operations team is looking at ways to operate the station for half the predicted costs of Freedom, using a variety of innovative techniques including combining or consolidating facilities, synergism with other programs and relocating functions. The operations team is sharing its experience in assembly, space and ground operations, logistics, maintenance and utilization with the design team, O'Connor said.

It's too early to predict how the redesign team will meet the technical, budgetary and deadline challenges laid out before it, he added.

"We're going to give it a try," O'Connor said. "The real answer is that there might be trades. We might feel that we have some option that meets the budget but doesn't meet some of the other criteria. What are we going to do about those? Can we bend on those or not? If we cannot, then we won't be able to do the job."

NASA's station partners, the European Space Agency, Canada and Japan, are staying involved in the redesign team, which has grown to about 60 people.

"We're shooting for every option achieving that goal of accommodating the international partners in the baseline, not as a growth option," O'Connor said.



JSC Photo by Andrew Patnesky

STS-60 Russian Mission Specialist Sergei Krikalev answers questions from Kaliningrad, Russia, and Lafayette, La., high school students touring JSC. The students are participating in an exchange program that includes a two-week U.S. visit by the Russian students and a reciprocal visit by the Lafayette students to Russia.

Krikalev prime Russian on STS-60

Sergei K. Krikalev will be the prime Russian mission specialist on STS-60 in November and Vladimir G. Titov will be his backup, NASA and the Russian Space Agency announced late last week.

The two cosmonauts have been undergoing mission specialist training for at NASA's Johnson Space Center, Houston, since early November 1992.

Krikalev will join Commander Charlie Bolden, Pilot Ken Reightler, and Mission Specialists Franklin Chang-Diaz, Jan Davis and Ron Sega.

Mission objectives include a number of microgravity experiments in Spacehab-2, the Wake Shield Facility experiment to test the creation of an ultra-vacuum to produce extremely pure thin film crystals for industri-

al uses ranging from microelectronics to lasers and superconductivity, a Capillary Pumped Loop Experiment to study a method of heat dissipation in space and a number of small experiments known as Getaway Specialists flown in the orbiter's payload bay. Russian Space Agency-sponsored life science activities also will be included in the mission.

The flight of a cosmonaut on the STS-60 mission is one element of the Implementing Agreement on NASA/RSA Cooperation in Human Space Flight, signed by NASA and RSA on Oct. 5, 1992. Other elements include the launch of a NASA astronaut to the Russian space station Mir in March 1995 and the U.S. Space Shuttle/Mir docking in June 1995.

Discovery shoulders ATLAS-2

Discovery's three main engines crackled to life at 12:29 a.m. Thursday and seconds later the shuttle, its Atmospheric Laboratory for Applications and Science-2 payload and the smallest 24-hour crew in shuttle history began their climb to orbit.

The on-time launch followed the second last-second abort in a month, but Tuesday morning's scrubbed launch attempt turned out to be a sensor problem—not a hardware problem like the one that has temporarily sidelined Columbia.

After receiving a "go" for orbit operations, the STS-56 crew—Commander Ken Cameron, Pilot Steve Oswald and Mission Specialists Ken Cockrell, Mike Foale and Ellen Ochoa—immediately got to work activating the suite of instruments that will spend eight days investigating the Sun, the solar wind and their effects on the Earth's atmosphere.

Crew members also began activating middeck payloads that will look at the effects of space flight on humans and animals, study commercial materials processing in microgravity and test the ability of a hand-held camera and inertial measurement unit package to precisely locate Earth observation photographs.

A highlight of the mission will be the Flight Day 4 deployment of the SPARTAN-201 pallet, which is carrying two instruments to study the physics behind the Sun's corona, and the Flight Day 5 retrieval of the free-flying platform and its collected data for return to Earth.

Tuesday's countdown was halted by Discovery's onboard computers at T-11 seconds when instrumentation on the liquid hydrogen high point bleed valve in the main propulsion system indicated off when it should have indicated on.

Follow-up analysis showed that the instrumentation was faulty and that the valve had been in the proper configuration for launch.



Gilbreath ends 30-year JSC career

McCright to succeed him at Center Operations helm

By Kelly Humphries

Kenneth B. Gilbreath, who helped guide the development of JSC's infrastructure of engineering and technical services, facilities and administrative support for more than 20 years, retired April 2.

Grady E. McCright, who has been deputy director of center operations since 1986, will succeed him.

"No one will probably ever know exactly how much Ken Gilbreath did for this center and America's space program," JSC Director Aaron Cohen said. "Many of the things we at JSC take for granted are a direct result of his hard work and that of his employees. He demanded a quality work environment for all of us, and

succeeded in maintaining one of the best facilities in the agency."

A native Texan, Gilbreath began work for NASA at the White Sands Test Facility in 1964 after working for Westinghouse Corp. in nuclear power plant operation and training of Navy submarine crews, and Martin Marietta Corp. in intercontinental ballistic missile site construction.

He became manager of White Sands in 1969, responsible for supervising facility operations, testing and laboratory management. He guided engineering development of the Apollo service and lunar module propulsion systems.

Gilbreath became deputy director of center operations in 1972, and

director in 1981, responsible for all aspects of facility design, construction, maintenance and operation, advanced photographic and television activities, and manufacturing operations involving space flight equipment research and development. He also provided overall direction for a diverse set of management support activities including security, supply, transportation, printing, graphics, publications, library operation and telecommunications.

"Ken spent 21 years in this suite, either as director or deputy," McCright said. "He was here a long time and he had a lot to do with the way this center looks and works

Please see **McCRIGHT**, Page 4



JSC Photo by Bill Blunck

Retiring Center Operations Director Ken Gilbreath, right, accepts a plaque from friends in the directorate. Attending the presentation were, from left, Technical Services Division Chief Vern Hammersley, Gilbreath's wife, Doris and new Center Operations Director Grady McCright.

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m.-2 p.m. weekdays. For more information, call x35350 or x30990.

EAA/JSC Picnic (May 1, Gilruth): adult, \$5; child, \$3; ticket price increases \$1 after April 27.

EAA Bluebonnet Trip (April 18, includes transportation, lunch, tours): \$22, limit 4 tickets per person.

EAA Astros vs. Cincinnati Reds (7:05 p.m. May 7, Astrodome): \$9.50. On sale until April 19.

Astroworld Early Bird Special — Tickets purchased before May 31 and used before June 30 at \$15.95.

Sea World in San Antonio — Discount tickets: adult, \$19.75; child (3-11), \$13.15.

Fiesta Texas, San Antonio — Discount tickets: adult, \$18.35; child (4-11) \$12.75.

Space Center Houston — Discount tickets: adult, \$7.50; child (3-11) \$4.50; commemorative: \$8.75.

Metro tickets — Passes, books and single tickets available.

Movie discounts — General Cinema, \$4.50; AMC Theater, \$3.75; Loews Theater, \$4.

JSC

Gilruth Center News

Sign up policy — All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

EAA badges — Dependents and spouses may apply for photo identification badges from 6:30-9 p.m. Monday through Friday. Dependents must be between 16 and 23 years old.

Defensive driving — Course is offered from 8 a.m.-4:30 p.m. May 15. Cost is \$19.

Weight Safety — Required course for employees wishing to use the Gilruth weight room is offered from 8-9:30 p.m. April 20. Pre-registration is required; cost is \$5.

Aerobics — High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks.

Exercise — Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for eight weeks.

Aikido — Martial arts class meets Tuesdays from 6:15-8 p.m. Cost is \$15 per month.

Volleyball/Basketball — Sign-ups will be held for the next season during the week of April 19. See flyers or call the Gilruth Center for additional information.

Self-defense workshop — Learn what you can do to be better prepared at a free self-defense workshop from 5-6 p.m. April 21. Call x30304 to reserve a seat.

Fitness program — Health Related Fitness Program includes medical examination screening, 12-week individually prescribed exercise program. Call Larry Weir, x30301.

JSC

Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2. No phone or fax ads accepted.

Property

Sale: Timber Cove waterfront, 3-2-5-2, study, 2400 sq ft, open floor plan, lg cov deck, \$175K. 326-1278.

Sale: Waco, condo, adjacent to Baylor, reduce college costs/IRS write off. x49804 or 334-3896.

Sale: CL Shores, 3-2-2, located on island, low 100's. 538-1849.

Lease/Sale: LC/Countryside North, 2-story, 3-2-5-2, 1800 sq ft, new mauve carpet, paint, ceiling fans, corner lot, avail Apr 1, \$795/mo. 244-8366 or 326-1390.

Sale/Lease: Heritage Park, 3-2-2, cul-de-sac, lg fenced yard, new carpet, miniblinds, \$64.5K or 725/mo. + dep. 326-5216.

Sale: Pipers Meadow, 4-2-5-2, new carpet, new vinyl, cathedral ceilings, bay windows, miniblinds, gas appl, x36617 or 488-8884.

Rent: Baywind I, 1 BR condo, ex cond, tennis, pool, rec facility, \$395/mo. x36353 or 480-9280.

Rent: Galv condo, furn, sleeps 6, Seawall Blvd & 61st, cable, wknd/wkly/daily rates. Magdi Yass, 333-4760 or 486-0788.

Sale: Pearland, medium density housing, all util, concrete street. x39530 or 482-5003.

Sale: Pearland, 2400 sq ft, 3-2-5-2A, 2-story, low taxes, no flood insurance, lg BR, all up, living, dining, lg game rm, sec sys, lg tiered deck, \$114.5K. x38187 or 992-5607.

Lease: Pipers Meadow, 3-2-2, lg l-shaped living area w/FPL, ceiling fan, miniblinds, fenced yd, outside grill, \$790 + dep. Walter, 332-1609 or 244-4424.

Sale: Sycamore Valley, 3-2-2A, formals, den, decorative accents, lg kitchen, 1800 sq ft, \$74.9K. Ann Marie, 333-1700 or 481-5465.

Lease: Friendswood/Wedgewood, 3-2-5-2, lg living rm, patio, trees, fenced, no pets, \$750/mo. 482-6609.

Lease: Pipers Meadow, 3-2-2, carpets, drapes, FPL, fenced yd, built-ins, \$825. 538-3352.

Sale: 4-3-2D, study, game rm, lg scr porch, kit w/Jennaire, new ceramic tile, lg lot w/trees, pkg boat/motorhome, \$124.9K. Shirley, 335-0641.

Sale: Dickinson Bayou, 4-2-5-2, pool, 100 yr old trees, WBF, volleyball/horse-shoe setup, extras, \$224K. x34354 or 337-1640.

Sale: Friendswood/Regency Estates, 3-2-2, 1.5 story w/game rm, master dn, lg country kitchen, FPL, privacy fence, home warr, \$89.9K. Jim, 482-8800.

Rent: Breckenridge, CO, sleeps 12, house overlooks ski area. 303-482-9124.

Sale: 2-story contemporary, sell below appraisal. 538-1849.

Rent: LC, 3-2-2, FPL, fenced, no pets, \$795/mo. 554-6200.

Sale: Sageglen, 3007 sq ft, 2-story custom circular staircase, 2 wetbars, 4-2-5-2, block panels, storm windows, solar screens, sec sys, lg corner lot, \$137.5K. x37760 or 481-4190.

Rent: New Orleans condo, French Quarter, Jazz Festival Wk, Apr 23-30, priv rooftop deck, furn, sleeps 4, \$500. 282-6422 or 280-8927.

Rent: Timeshare condo, \$575/wk, domestic, \$600/wk international, anywhere in world, multiple destinations. 282-3339 or 286-8417.

Lease: Sycamore Valley, 3/4-2-2, lg living areas, oversized lot, burglar alarm, 2000 sq ft, avail end of May. 481-8290.

Cars & Trucks

'84 Toyota Supra, pwr sunroof, Clifford alarm, 91K mi, \$4.4K. Michael, x30993 or 333-1856.

'90 Lincoln Towncar, w/ht/gray, loaded, car phone, low miles, \$18.9K. Tom, 244-1119 or 534-4958.

'91 Jeep Renegade, hardtop, AC, loaded, red/blk, 12K mi, ex cond, \$15.9K. Tom, 244-1119 or 534-4958.

'86.5 Supra, blue, auto, full pwr, leather, new tint, \$5.9K. Ed, x38309 or 409-925-8051.

'88 Ford Escort GL, 4 DR, AC, new tires, good car, 70K mi, \$2950. Carl, 334-6495.

'80 Ford Mustang, high miles, not running, good tires, fix-up project, \$900 OBO. 480-5168.

'85 Lincoln TC, loaded, vinyl roof, ex cond, one owner, \$4.5K. 488-1320.

'79 Datsun 280ZX, new paint, 92K mi, \$2.2K. x32458 or 333-9518.

'83 Volvo GLE Turbo, 5 spd, 2 DR, AM/FM/cass, good cond, \$2.4K OBO. 474-4132.

'84 Nissan 300ZX 2+2, auto, AC, stereo cass, cruise, elec mirrors, 4 wheel disk brakes, \$3.5K. 488-7771.

'78 Porsche 928, brwn w/leather int, auto, 75K mi, ex cond, \$8.5K. Bill, x48889.

'67 Ford PU, V8, little rusk, 1K + miles eng rebuilt, new parts, \$950. 484-7104.

'78 Merc Cougar, \$650 OBO; '85 Buick Skylark, \$1250 OBO. x38976 or 409-925-5230.

'85 Honda Accord LX, 4 DR, pwr, loaded, new tires, ex cond, \$2.7K OBO. x45142 or 286-5731.

Boats & Planes

Hi-fly windsurfer, 2 sails, \$375. Bill, 554-6242.

Boatslip and hoist for powerboat,

JSC

Dates & Data

Today

Cafeteria menu — Special: meat sauce and spaghetti. Entrees: franks and sauerkraut, sweet and sour pork chop with fried rice, potato baked chicken. Soup: cream of potato. Vegetables: French beans, buttered squash, lima beans.

Tuesday

Cafeteria menu — Special: smothered steak with dressing. Entrees: beef stew, liver and onions, shrimp Creole. Soup: navy bean. Vegetables: buttered corn, rice, cabbage, peas.

Wednesday

Toastmasters meet — The Spaceland Toastmasters Club will meet at 7 a.m. April 14 at the House of Prayer Lutheran Church. For more information, call Jim Morrison at 480-9793.

Astronomy seminar — The JSC Astronomy Seminar will feature an open discussion meeting at noon April 14 in Bldg. 31, Rm. 129. For more information, call Al Jackson at 333-7679.

Freedom Fighters meet — The Space Station Freedom Fighters will meet at noon and 5 p.m. March 10 in Rm. 160 of the McDonnell Douglas Tower, Space Center Blvd. and Bay Area Blvd. For more information, call David Cochran at 482-7005.

Cafeteria menu — Special: salmon croquette. Entrees: roast beef, baked perch, chicken pan pie. Soup: seafood gumbo. Vegetables: mustard greens, Italian green beans, sliced beets.

Thursday

NCMA seminar — The JSC chapter of the National Property Management Association will host a seminar April 15 and 16 at the Gilruth Center. Three nationally recognized speakers will discuss liability and acquisition. For more information, call S. Hawsey at x36582, or R. Redford at x36535.

Cafeteria menu — Special: stuffed cabbage. Entrees: beef tacos, ham and lima beans. Soup: beef and barley. Vegetables: ranch beans, Brussels sprouts, cream style corn.

Friday

Cafeteria menu — Special: Salisbury steak. Entrees: fried shrimp, deviled crabs, ham steak. Soup: seafood gumbo. Vegetables: buttered carrots, green beans, June peas.

Saturday

Clothing fair — The JSC Child Care Center's Semiannual Clothing Fair will be from 9 a.m.-noon April 17 at the Child Care Center. Members of Space Family Education Inc. will offer used children's clothes, toys and other child-related items for sale. All proceeds will go to the participating families. For more information, call Julie Kliesing at x31540, or Reese Squires at x37776.

Sunday

Spring concert — The Bay Area Chorus will begin its spring season with "An Afternoon of American

Music" at 4 p.m. April 18 at Grace Presbyterian Church, 10221 Ella Lee. Cost is \$8 for adults, \$5 for students and senior citizens; proceeds support the Bay Area Chorus Scholarship Fund. For more information, call 684-6030.

Monday

Cafeteria menu — Special: hamburger steak. Entrees: beef Burgundy over noodles, fried chicken. Soup: cream of chicken. Vegetables: buttered corn, carrots, green beans.

April 23

Lunch and learn — The American Institute of Aeronautics and Astronautics' Computer and Software Systems Technical Committee will present a lunch and learn meeting at 11:45 a.m. April 23 in Lockheed Plaza 3. Michael O'Dell, Beth Lawrence and Richard Astrom will discuss "SEI Capability Maturity Model: A Better Way to Build Software." For more information, call Cora Carmody at 282-6580, or Tek Shrini at 282-6643.

April 25

Choral concert — The Bay Area Chorus will continue its spring season with a concert at 4 p.m. April 25 at Lakeside Lutheran Church, 3025 South Shore Dr. in League City. Cost is \$8 for adults, \$5 for students and senior citizens; proceeds support the Bay Area Chorus Scholarship Fund. For more information, call 684-6030.

TI-99-4A. 944-3523.

Pets and Livestock

Free, 1 yrd old Hill Mynah bird, talks some, needs attention, must have own cage. Christie, 333-7484 or 333-0270.

Free, 2 young Calif breed rabbits, w/ht w/blk/gray ears, nose, paws, tal, m-f, from Champion pen. Elaine, x45388 or Elaine/Matt, 480-0113.

Musical Instruments

Lowery elec organ, dbl kybd, bass foot pedals, ex for home use or small church, ex cond, \$495. 447-4207.

6 string, Encore, traditional guitar, good cond, \$75. Holly, 482-1685.

Yamaha acoustic, Grover machines, ex cond, \$225; Lab 100 w guitar head, \$75. Joe, x30225 or 339-1123.

Household

25" Bell & Howell/Heath tv, walnut floor model cabinet, built-in alignment/test features w/manuals, \$175 OBO. 326-1278.

Matching sofa/chair, earth tones, coffee table, \$65 for all, OBO. Susan, x33076 or 280-0479.

Overstuffed gray velvet chair, great cond, \$75 OBO. 538-3320.

2 twin sz beds, one w/hdbd, \$70 for both. Sue, 480-5027.

5 pc sectional w/rocker/recliner, green w/mauve/gray pinstripping, 1.5 yrs old, \$1250; 6.6 cu ft GE refrig w/blk face, 1.5 yrs old, \$1150. 244-1119 or 534-4958.

2 heavy whitewashed oak shelf units w/doors, \$150/ea. Claire, 488-5307.

Dk blue/red oriental rug, 8 x 12, \$75; off w/ht traditional loveseat, \$50. Brad, x30453 or Lisa, 474-5609.

23" Zenith console tv, cable ready, good cond, \$150. 482-2282.

Full sz matt/box spring, ex cond; teak dining rm tbl w/2 leaves. Vicky, x32395 or 481-5306.

8' L shape bar w/corner pc, 3 stools, handmade in Madrid, \$500; antique Mediterranean dining rm set, tbl, 6 chairs, buffet/sideboard w/4' mirror, china cabinet, \$4K; lg Spanish wall unit w/3 glass display section, \$450; Greek Flokat rug 9 x 12, 4" thick, w/ht, \$400; qn sz sleeper sofa, \$100. x38187 or 992-5607.

Wood stove, \$100; jelly cupboard, \$225; pine cabinet for tv, \$350; pine cabinet, \$275; red desk, \$130; 6 ladderback chairs, \$100; rocking chair, \$125; farmers tbl, \$175; assorted ladderback chairs, \$20/ea.; loveseat, \$75; chair, \$35 or both for \$100; 2 wood plant stands, \$35 996-1442.

Kenmore heavy duty w/d, \$150 for both. Bob, 796-1406.

Maytag dryer, elec almond colored, new motor, \$150 OBO. x30622 or 332-4245.

Wht French Provincial furn, full bed w/canopy, chest of drawers, dresser w/mirror, nightstand, hope chest, desk, chair, lamp, \$600 OBO. Michele, 286-3652.

Wht Whirlpool dryer, runs great, \$60. 338-2307.

Wanted

Want lg trampoline. Pat, x31105.

Want sm dirt bike for beginner, running or not. Andy, 332-9105.

Want cheap work/school car w/AC. 486-4700.

Miscellaneous

Echo weed/gas trimmer, gas pwr, \$95; Craftsman chain saw, 20" bar, case/can incl, \$250; alum fold up ladder, 12', 225 lb duty rating, \$95; B+D workmate, \$25. Michael, x30993 or 333-1856.

Smith Corona elec typewriter w/case, \$20; Mikasa china, charisma grey, 8 place settings, serving pcs, \$100 OBO. Susan, x33076 or 280-0479.

6 pc sectional couch, \$300 OBO; club membership, Pres + 1st Lady, \$400 OBO; Singer sewing machine, maple cabinet, \$100. 482-9601.

4' sq tinted, tempered, 1 pc glass picture window w/alum frame, \$65. Jerry, x38922.

Blk ranch mink jacket, sz lg, was \$800, now \$600. Christie, 333-7484 or 333-0270.

French Provincial fruitwood sofa, beige, Bimini top for CJ7. 282-4849 or 409-925-7839.

Garage dr, single, wood panel, all hardware incl, \$50. Gary, 244-8392 or 480-9716.

Original Town and Country horns from '39 Chevrolet, make offer. 326-3459.

PU camper shell w/walkin dr and crank out windows, fits 6' PU bed, \$100. 538-1599.

Ceramic kiln w/extra heating element, some molds, other accessories, \$80. x33729 or 585-3404.

Medical type lounge chair used for dialysis treatment, \$400. E. Rubenstein, x34807 or 532-2211.

50 mint sheets of 8 cent US commemorative stamps, \$420. Jeff, 333-7010 or 482-5393.

Playskool baby monitor, new cond, \$20. Rich, x38519 or 996-7630.

10 gal aquarium, custom oceanic wood stand, complete w/heater, undergravel and power filters, \$40. Ron, x48712.

Prom dresses, several styles, sz 3-5; Southwest style pictures, \$10-\$20. Jo Lynn, 941-4307.

Baby items, children's desk w/chairs, \$40; car seats, \$20/ea; baby scale, \$10; speakers, \$30. 486-5247.

4 used Greylock mountain 39x85", 4 lb. sleeping bags; green nylon exterior, insulated w/Dupont Hollofil 808 Dacron, \$25/ea. 326-2186.

Off w/ht wedding gown, decorated w/pearl beads/sequins, lace back w/pearl buttons, chapel length train, fits sz 6-8, was \$900, now \$400. Laura, 335-2388 or 532-1557.

Scuba regulator, Dacor w/pressure gauge, \$100 OBO. Monte, 334-6578 or 332-6681.

Ping clones, Zing, 3-SW, \$180. Ken, 283-9233 or 473-2602.

Student to Student

JSC cooperative education workers share experiences with high schoolers; guide them toward science, math careers



By Kelly Humphries

Maybe it's because they're about the same age as the young people they're trying to reach. Maybe it's because they don't come off as the "techno-nerds" that many people associate with the space program. Maybe it's because they try to talk about things in down-to-earth language.

Whatever the reason, a small group of JSC cooperative education students is making inroads into the dreams and aspirations of a growing number of Houston-area high school students.

Armed with a variety of props — everything from a globe, a tennis ball and a pin to spacecraft models and hypervelocity impact gun parts — a group of enterprising JSC cooperative education students last month took on the challenge of channeling young people toward careers in science, mathematics and technology at South Houston High School.

The 25 cooperative education students, or "co-ops," shared their personal experiences from school and the work place with a total of about 1,000 students from 52 different classes, showing them how they can become involved in the space program of the future. The co-ops attempted to relate their experiences to the need for scientists, engineers and mathematicians, as well as to the high school students' current and future course work.

"For our presentation, things went pretty well," said David McDonald, a co-op in the Safety, Reliability and Quality Assessment Office. "At first, it was kind of difficult to reach them because they had preconceived ideas that we were over their heads. But I hope we were successful in showing them it really isn't all that difficult and not above their heads."

The visits were part of the Cooperative Education Program's High School Outreach Program, established in 1991 in an effort to channel high school students into science, mathematics and technology career paths. The program has four primary objectives — to promote math and science education, to encourage students to enter careers in the space program, to send a general "pro-space" message to the educational system and to promote the educational goals of NASA and the federal government.

Co-ops alternate between their college studies and rotations as full-time NASA employees, mixing their education with on-the-job training. Most JSC co-ops are engineering students, but some are studying business, English, science and other fields. Because of the similarity in age and status, co-ops believe they are well-suited to bridge the gap with high school students.

McDonald and his fellow presenters tried to get across their point about the distances involved in space travel by using everyday items to demonstrate.

In one example, they positioned three students — one holding a globe of the Earth to represent the size of the Sun, one holding a tennis ball to represent the size of the Earth, and another holding a pin's head to represent the size of the Moon. Then, they had the students walk around each other, simulating the orbits of the astronomical bodies.

In another demonstration of relative size and distance, they held a one-foot-diameter drawing of the Earth against the blackboard to represent the Earth, and walked a baseball to the other end of the room, showing the distance the Apollo astronauts had to travel on their journeys. Then, they flipped over the drawing to reveal a one-foot-diameter picture of the Sun and explained that if the Sun were really that size the

nearest star would be as far away as Brisbane, Australia.

The co-ops tried to tailor their presentation to different classes and prove that NASA scientists and engineers really do use basic mathematics in their

work, discussing the mathematical applications of elliptical orbits to the geometry class and a calculus class.

"Everybody tried to give an application problem to show them that even though work at NASA is highly technical, we use basic math in everyday life here," said McDonald, a junior at Purdue University in Indiana.

In past years, co-ops have made presentations to about 1,400 students at the LaPorte, Clear Creek and Dickinson High Schools. McDonald said this year's presentations were a little easier because South Houston High is not as close to JSC. When the co-ops had visited nearby schools, many of the students had parents working there and knew as much or more about the space

program as they did.

Tricia Mack, a co-op in Mission Operations' EVA and Crew Systems Section, said many of the questions were about what they should do to prepare for college, how they can get into the co-op program and what kinds of jobs they'll be asked to do at NASA.

"One of the comments we got is that we don't come across as technical nerds," said Brent Hurd, who completed a co-op tour in the Space and Life Sciences Directorate's business management office last year. "We come across as real, down-to-earth people. I think we're honest and they appreciate that and they really want to listen because there's a lot they didn't know before we went in there."

Hurd said he believes the experience is good for the co-ops as well, allowing them to hone their presentation skills for a different kind of audience.

"Personally, it's cool. I've never been in a position where I can impart knowledge and inspire people like that," Hurd said. "I think it's a great program. I really would have liked to have had someone like me speak to my class high school. I'm not saying that would have been the green light for me, but I think it would have helped me out."

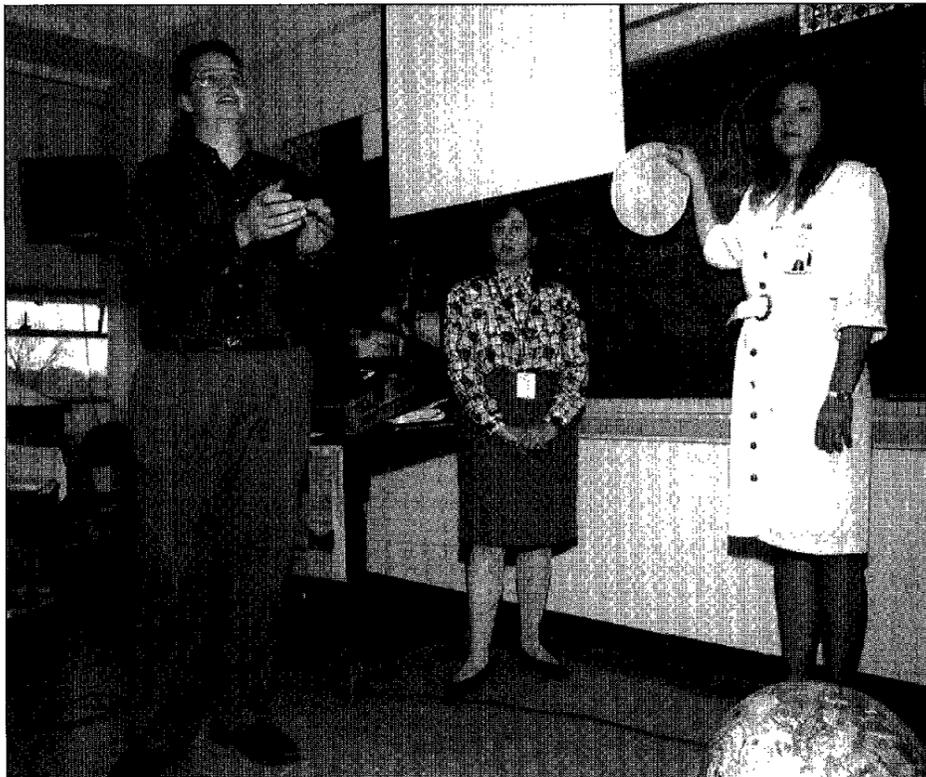
Hurd and McDonald said they also talked to the high school students about the importance of dreaming big dreams and then sticking with them.

"Our whole existence here is what you see when you watch the shuttle go up," Hurd said. "Our existence is to further the grasp of mankind through the advancement of technology, exploring the unknown. The whole idea is to go where no man has gone before."

But the practical took a front seat for many of the students who witnessed the presentations this year, McDonald said. The most asked question was "How much do you make?" □

‘We come across as real, down-to-earth people. I think we’re honest and they appreciate that and they really want to listen because there’s a lot they didn’t know before we went in there.’

—Brent Hurd, Space and Life Sciences Directorate co-op



JSC Photos

Top: JSC Co-op David McDonald demonstrates relative size and distance of the Sun, Earth and Moon using a globe, a tennis ball and a pin head. From left are South Houston High School student Jason Lucas, McDonald, and students Jonathon Sawyer and Paula Cobb. Left: Co-ops McDonald, Susanne Clark and Tamara Hansel make their presentation to a high school class. Above: Brad Hofman, Tricia Mack and Brent Hurd speak to a class at Dickinson High School.

NASA scientists help wine growers with lousy problem

Scientists at NASA's Ames Research Center and California wine growers will use aerial and satellite images to battle a serious insect problem facing California's \$10 billion-a-year wine industry this summer.

Sensitive electronic scanners on aircraft and satellites will help a team from government, industry and several universities map and analyze root louse damage in northern California's premier wine growing region.

"Scanners can detect plant stress before it is visible to the naked eye," said Joan Salute, AMES Project Manager for the Grapevine Remote Sensing Analysis of Phylloxera Early Stress (GRAPES) project.

"This will help vineyard managers develop replanting plans. Replanting

with resistant roots is the only way to rid the vineyards of the pest," she said.

About 65 percent of Napa and Sonoma counties' vineyards are planted with a grape rootstock vulnerable to a new strain of phylloxera. Phylloxera is an aphid-like insect that kills grapevines by sucking juice from the plants' roots. The bug nearly destroyed the vineyards of France and California more than a century ago, causing severe economic hardship.

The team includes Ames Research Center; Robert Mondavi Winery, Napa Valley; University of California Cooperative Extension, Napa; University of California, Davis; and California State University, Chico.

Robert Mondavi, which plans con-

tinued use of the technology, will make the results from the jointly financed \$350,000-a-year, 3-year study available to other wine growers.

Field work using ground-based scanners to make initial measurements of leaves will begin in mid-April as the leaves develop. Images from infested and non-infested grapevines will be analyzed to determine the earliest detectable spectral differences.

The first remote sensing flights will be scheduled in mid-summer as the grapevine foliage increases.

"The spatial analysis offered by remote sensing and the potential for early damage detection are valuable tools for wine growers," Salute said.

"Satellite and aircraft scanners can map very large areas. When

combined with a computerized geographic data base, they will provide crucial overviews of phylloxera spread patterns.

"Differences in soil and surrounding land use that may affect the spread patterns can then be assessed. We hope to learn enough about how, why and where phylloxera spreads to be able to develop relative risk maps for future infestations," she said.

"Understanding the spread of new infestation sites is critical," said Phil Freese, Robert Mondavi's Vice President of wine growing.

"Replanting is costly—about \$20,000 an acre. If we can determine the risk and pace of vine decline, we can better manage the financial investment of replanting. Developing methods for predicting

phylloxera spread also will help us manage less catastrophic pests in the future," he said.

"Phylloxera damage is not usually visible until 2 or 3 years after the insect has been feeding on the plant," Salute said. "At that point, the plant declines rapidly and cannot mature the fruit for harvesting."

"Our multi-sensor, multi-scale approach will allow us to measure several early indicators of plant health. Scanners that record the visible and near-infrared light from grapevine leaves will detect nutrient deficiencies that eventually turn the leaves yellow."

Thermal scanners also will be used to record plant health. Stressed plants are warmer because they cannot efficiently pass water through their membranes.

Co-ops plan spring job fair

The Spring 1993 Co-op Job Fair will be from 10 a.m.-4 p.m. Thursday in the Gilruth Center gymnasium.

The event will give JSC's cooperative education students an opportunity to display and present the functions of the organizations for which they work, and to discuss the projects they have been assigned and the roles they have played in those projects.

All managers and all universities and colleges that participate in the co-op program have been invited, and anyone who is interested may attend.

For additional information, call Dishayne Garcia at x35564.

Aerospace education workshop available to employee spouses

JSC's Public Services Branch will sponsor a special aerospace education workshop for teachers who are spouses of JSC employees the week of July 12-16.

The workshop will be from 8:30 a.m.-5 p.m. each day, and will include about 36 hours of Advanced Academic Training credit.

Only 30 elementary teachers who are married to JSC employees will be able to participate, so employees are encouraged to advise their spouses to sign up early.

Applications are due no later than April 23 to the workshop coordinator, Norma Rhoads, AP4, in Bldg. 2, Rm. 180. For more information, call Rhoads at x30235.

EAA obtains tickets for two Rockets games

By special arrangement, the Employee Activities Association has obtained a limited number of discount Houston Rockets basketball tickets for employees.

The tickets are for the Minnesota Timberwolves game on April 22 and the Dallas Mavericks game on April 24. The regularly \$12 tickets will sell for \$5.50 at the JSC Exchange Store in Bldg. 11 starting today.

Each badged employee may purchase a maximum of six tickets. For additional information, call Mavis Lancen at x49644.



Members of the JSC Picnic Committee are pushing to make this the best picnic yet, with a special emphasis on family-oriented fun.

JSC Photo by Robert Markowitz

When they say shuttle, they mean it

JSC employees who "Shuttle Into Fun" at this year's JSC Picnic will have a new way to get there this year—tram service.

The tram service will be provided by Space Center Houston between the Gilruth Center picnic grounds and the Bldg. 25, 30, and 45 parking lots beginning at 10:30 a.m. The picnic will be from 11 a.m.-5 p.m. May 1.

Put together by the Employee Activities Association, it will have something for everyone, including carnival rides and games, a petting zoo, a magician, video games, electronic basketball, a martial arts demonstration, bingo, egg and balloon toss, palm and card reading, and a golf chipping contest.

While celebrity cartoon characters—Barney the Dinosaur, Robot Andy and Robot Mac, Mother Goose and various critters from Astroworld—roam the grounds, co-workers you'd most like to put in the drink will be seated in the ever-popular dunk tank.

An "Anything Goes" team competition event promises to be a special highlight for spectators. Interested contestants may sign up or get details in advance at the Gilruth Center. Team winners get T-shirts and trophies.

Musical entertainment throughout the day will be provided by the Los Gallitos

Mariachi Band, Homer Lejune Cormier and the Sundown Players specializing in cajun music and will feature the Stars of Texas Dancers.

No picnic is complete without the full complement of foods including choice of a hamburger/cheeseburger, grilled chicken sandwich, hot/chili dogs and any two side dishes consisting of potato salad, cole slaw, country beans or chips.

Fun foods including popcorn, snow cones, cotton candy and ice cream also will be available around the grounds. Soft drinks, lemonade, iced tea, beer and wine will serve as refreshments.

A picnic flyer with specific schedule and event details will be distributed prior to the picnic and similar information will be included in the JSC employees' leave and earnings statement. In addition, signs will be posted on the picnic grounds with schedule information.

Picnic tickets are required for access to the grounds and for food. Special identification buttons will be issued to ticket holders for access to the concessions. Tickets are \$5 for adults and \$3 for children at the Bldg. 11 Exchange Store through April 26. Prices increase \$1 each April 27; sales end April 29. For more information about the picnic, call Melody Nation at x33152.

NASA signs pact to fly instruments on Mars '94 probe

NASA Administrator Daniel S. Goldin and Russian Space Agency Director Yuri Koptev have signed a contract with a potential value of \$1.5 million to fly two U.S. Mars Oxidant Experiment instruments on the Russian Mars '94 Mission.

The Mars '94 probe, to be launched in November 1994, will deploy small landing stations and penetrators and carry a complement of instruments to study the surface and atmosphere of the planet Mars.

Under the contract, the Babakin Engineering Research Center, Moscow, and the Space Research Institute of the Russian Academy of Sciences, Moscow, will provide technical services for integrating and testing the U.S. MOX instruments.

A duplicate MOX instrument will fly on each of the two Russian small stations. These instruments will conduct soil reactivity/composition experiments to provide chemical information about the volatile components in the Martian soil. These experiments will enable scientists to characterize the Martian physical and chemical surface environment.

Subject to appropriation of funds in fiscal year 1994, NASA plans to exercise an option under the contract to procure an engineering model of the Mars '94 small station. This will allow NASA to perform integration tests with the U.S.-supplied flight instrument systems in preparation for integration on the flight models with minimal impact to existing instrumentation. The model also will improve NASA's understanding of lander technology for future Mars missions.

The implementing agreement on NASA's participation in the Russian Mars '94 Mission was signed by NASA and RSA on Oct. 5, 1992, in Moscow.

Greene new assistant to engineering leader

Deputy Associate Administrator for Exploration Jay Greene is being reassigned to JSC as the assistant to the director of engineering.

The reassignment of Greene, who will be responsible for NASA's access to space initiative, is another in a series of key leadership changes involving the space shuttle and space station programs, and the merger of JSC's New Initiatives Office and Exploration Programs Office that began several weeks ago.

Greene will work with Leonard Nicholson, who is leaving the job of Space Shuttle Program manager to become JSC's director of engineering. Henry Pohl has been assigned to JSC Director Aaron Cohen's staff to spearhead the center's support to the agency's space station redesign effort.

Greene joined NASA in 1965 and served as a flight director, chief of JSC's Safety Division and deputy manager of the Space Shuttle Program.

Panel to consult with Russians as needed

(Continued from Page 1)

ed. They also received a legal and ethics briefing and an orientation on the process the Station Redesign Team is following to develop options for the advisory committee to consider.

The panel is charged with independently assessing various redesign options of the space station presented by NASA's redesign team, and proposing recommendations to improve efficiency and effectiveness of the space station program by June.

Former astronauts Rick Hauck, now president of International Technical Underwriters, and Dr. John

Fabian, now president and chief executive of ANSER, are on the panel. JSC's Chief Astronaut Robert "Hoot" Gibson and John McCarthy of NASA's Office of Aeronautics will be liaisons between the agency's redesign team and the blue-ribbon advisory panel.

The Russians will be asked to participate in the redesign effort on an as-needed consulting basis, so that the redesign team can make use of their expertise in assessing the capabilities of Mir and the possible use of Mir and other Russian capabilities and systems. Careful integration of Russian assets could be a key factor in developing options

for reducing station costs while preserving key research and exploration capabilities. The international partners believe integration of Russian assets could be a key factor in achieving that goal.

The redesign team will make use of the Russians' expertise to assess the capabilities of Mir, and the possible use of Mir and other Russian capabilities and systems.

NASA Administrator Daniel S. Goldin said the Russian participation will be accomplished through the East-West Space Science Center at the University of Maryland under the leadership of Roald Sagdeev.

Space News Roundup

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Editor Kelly Humphries
Associate Editor Kari Fluegel

McCright takes reins

(Continued from Page 1)

today. He established some high standards of performance and it will be a tough challenge to live up to them."

McCright joined NASA at White Sands in 1966 and transferred to JSC in 1970 to serve as the systems engineer for the Space Environment Simulation Laboratory. He later returned to White Sands and coordinated the efforts supporting the only shuttle landing at White Sands in 1982.

In 1984, McCright returned to JSC as chief of the Plant Engineering Division. He became deputy director of center operations in 1986.